IN THE CLAIMS:

Amend claims 10, 13, 17, 18 and 20 as shown in the following listing of claims, which replaces all previous listings and versions of claims.

1. (previously presented) A method for manufacturing a split probe by channel processing a probe tip on a microcantilever, comprising the steps of:

tilting the microcantilever;

scanning and irradiating the probe tip of the tilted microcantilever with a focused ion beam to obtain a SIM image of the probe tip;

deciding a central position of the probe tip from the obtained SIM image of the probe tip; and

forming a split section in the probe tip by scanning and irradiating the decided central position using a focused ion beam so as to form a first channel.

2. (previously presented) The method for manufacturing a split probe according to claim 1, wherein the first channel is also formed by irradiating the focused ion beam at the central position after being rotated 180 degrees around an axis vertical to the microcantilever.

3. (previously presented) The method for manufacturing a split probe according to claim 1, wherein conductivity of the divided probe tip is cut by forming a second channel connecting to the first channel at a conductive portion covering the microcantilever either after or before processing of the probe tip.

4. (original) The method for manufacturing a split probe according to claim 3, wherein focused ion beam processing current at the time of forming the second channel is larger than focused ion beam processing current for forming the first channel.

5. (previously presented) The method for manufacturing a split probe according to claim 3, wherein a width of the second channel is broader than that of the first channel.

6. (original) The method of manufacturing a split probe according to claim 3, wherein processing depth during processing of the first and second channels is of an extent that does not pass through an insulation film at a lower part of a conductive film.

7. (previously presented) The method for manufacturing a split probe according to claim 1, wherein processing of the probe tip is carried out by changing the tilt angle of the entire microcantilever a plurality of times.

8. (previously presented) A method for manufacturing a split probe by channel processing a probe tip on a microcantilever, comprising:

a first step of deciding a central position and a processing position of a probe tip using an SIM image of the probe tip obtained by irradiating and scanning only the very tip of the probe of the microcantilever with a focused ion beam current with the whole of the microcantilever in a tilted state;

a second step of channel processing the probe tip with the whole of the microcantilever tilted; and

a third step of returning the whole of the microcantilever to a horizontal position and further channel processing the probe tip.

9. (previously presented) A method for manufacturing a split probe by channel processing a probe tip on a microcantilever, comprising:

a first step of deciding a central position and a processing position of a probe tip using an SIM image of the

probe tip obtained by irradiating and scanning only the very tip of the probe of the microcantilever with a focused ion beam current of 10pA or less with the whole of the microcantilever in a tilted state;

a second step of carrying out first channel processing of the probe tip using a focused ion beam current of 10pA or less with the whole of the microcantilever tilted; and

a third step of returning the whole of the microcantilever to a horizontal position, switching over to a larger focused ion beam current than the focused ion beam current used in the first and second steps, and performing processing for a second channel connecting with the first channel by cutting a conductive film spanning from the probe base to the base of the microcantilever.

10. (currently amended) A method of manufacturing a split probe tip on a cantilever, comprising the steps of:

providing a cantilever having a surface on which is formed a probe that projects outwardly from the surface at one end of the cantilever;

irradiating and scanning a tip of the probe with a focused particle beam ~~directed in a direction that~~ while the cantilever is in a tilted state so that the irradiating direction of the focused particle beam is inclined relative to the surface of the cantilever to obtain an image of the probe tip;

determining the center of the probe tip from the image of the probe tip; and

forming a first channel in the probe tip at the center thereof by irradiating and scanning the center of the probe tip with a focused particle beam to form a split probe tip having two spaced-apart probe tip parts.

11. (previously presented) A method according to claim 10; wherein the forming step comprises using the focused particle beam to form a first channel section that extends radially inwardly from a periphery of the probe tip, and then using the focused particle beam to form a second channel section that extends radially inwardly from the periphery of the probe tip at a location opposite the first channel section and that connects to the first channel section to define therewith the first channel.

12. (previously presented) A method according to claim 11; wherein in the irradiating and scanning step, only the tip of the probe is irradiated and scanned with the focused particle beam.

13. (currently amended) A method according to claim 11; wherein the providing step includes providing a cantilever having a conductive film formed on the ~~flat~~ surface of the cantilever and on the probe; and further including the step of

using a focused particle beam to form a second channel that extends completely through the conductive film and that connects to the first channel to electrically separate the two probe tip parts from one another.

14. (previously presented) A method according to claim 13; wherein the focused particle beam current used in forming the second channel is larger than that used in forming the first channel.

15. (previously presented) A method according to claim 11; wherein the focused particle beam is a focused ion beam.

16. (previously presented) A method according to claim 15; wherein the focused ion beam current used to obtain an image of the probe tip and the focused ion beam current used to form the first channel are both 10pA or less.

17. (currently amended) A method according to claim 15; ~~wherein the irradiating and scanning step inclues tilting the cantilever to a tilted state so that the irradiating direction of the focused ion beam is inclined relative to the cantilever flat surface; and~~ wherein the forming step includes forming the first channel section with the cantilever in the tilted state and forming the second channel region with the cantilever tilted 180° from the tilted stated.

18. (currently amended) A method according to claim 17; further including the steps of placing the cantilever, after forming the first channel, in a non-tilted state in which the cantilever ~~flat~~ surface is normal to the irradiating direction of the focused ion beam; and using a focused ion beam to form a second channel in the probe that connects to the first channel and that extends to a base of the probe.

19. (previously presented) A method according to claim 18; wherein the focused particle beam current used in forming the second channel is larger than that used in forming the first channel.

20. (currently amended) A method according to claim 10; wherein the forming step is carried out with the cantilever in the tilted state so that the irradiating direction of the focused particle beam is inclined relative to the cantilever ~~flat~~ surface.